Chaff, Flares and CADs Can Kill

By George Alston

The ALE-39 and ALE-47 countermeasures dispensers have saved many lives and aircraft. This same system can be deadly when maintenance technicians fail to follow safety procedures found in the maintenance manuals.

We've had too many reports of maintenance error and inadvertent ejection of chaff, flares and cartridges. The attached excerpts taken from one of many recent reports—this one an ALE-47 explosive event report (EER)—show the affects in one case. Unfortunately, we've had a rash of cases, and everyone who handles these items needs to be aware of the dangers faced every day with these small but powerful items.

Navy photo by MC1 Eric Benson

AO3 Cary Buel installs a MJU-49/B Decoy Flare bucket into the ALE-47 Counter Measure Dispensing system on a P-3C Orion assigned to VP-9. The Counter Measure Dispensing system is vital to the survivability of the P-3C by enabling the crew to dispense chaff and flares in defense of enemy fire.

1. CHAIN OF EVENTS: A CH-53E AIRCRAFT CONFIGURED WITH 30 MJU-32 AND 30 MJU-49 RETURNED FROM AN ARMED MISSION WITH AN ALE-47 DISCREPANCY. THE AIRCREW PROPERLY DE-ARMED THE ALEPODS AND CONDUCTED A NORMAL SHUTDOWN. THE ORDNANCE DIVISION WAS TASKED BY MAINTENANCE CONTROL TO REMOVE THE DISPENSER MAGAZINES AS SOON AS POSSIBLE. THE HELICOPTER AIRCRAFT COMMANDER(HAC) DEBRIEFED THE SENIOR T/M/S AVIONICS TECHNICIAN THAT, ALTHOUGH THE ALE-47 CIRCUIT BREAKERS WERE PULLED OUT AND THE CONTROL PANEL WAS ON STANDBY, THE ALE CONDUCTED AN IN-FLIGHT UNCOMMANDED DISPENSING OF FLARES.THIS AIRCRAFT WAS NEEDED THE NEXT DAY FOR A COMBAT MISSION, SO MAINTENANCE CONTROL REQUESTED THAT THE ORDNANCE DIVISION ASSIST THE AVIONICS DIVISION WITH THE ALE-47 DISCREPANCY. AVIONICS SENT THREE TECHNICIANS TO THE AIRCRAFT TO INVESTIGATE THE PROBLEM. THE ALM-290 TEST SET WAS NOT READILY AVAILABLE, SO THE ORDNANCE TECHNICIAN ASSIGNED TO ASSIST AVIONICS LEFT THE EXPLOSIVE EVENT AIRCRAFT TO RETRIEVE THE TEST SET FROM A CONCURRENT AH/UH DOWNLOADING EVOLUTION IN ANOTHER LOCATION ON THE AIRFIELD. TECHNICIAN #1 WRONGLY ASSUMED ALL EXPENDABLES HAD BEEN REMOVED AND PROCEEDED DIRECTLY INTO THE AIRCRAFT WITHOUT INSPECTING THE MATERIAL CONDITION OF THE ALE PODS.

HE DISCONNECTED THE APPROPRIATE CIRCUIT BREAKERS AND THEN APPLIED POWER TO THE AIRCRAFT IN ORDER TO METER THE APPROPRIATE ALE COMPONENTS. TECHNICIAN #1'S TROUBLESHOOTING REVEALED THAT THERE WAS NO POWER GETTING TO THE SYSTEM. TECHNICIAN #1 THEN PUSHED IN THE CIRCUIT BREAKERS, WHICH ENERGIZED THE SYSTEM WITH 28 VOLTS AT THE CIRCUIT BREAKER. TECHNICIAN #1 EXAMINED THE FIRING SWITCHES IN THE CABIN AND REALIZED NONE OF THE COUNTERMEASURE DISPENSING SWITCHES HAD ILLUMINATED.HE THEN ASKED TECHNICIAN #2 TO ARM BOTH ALE-47 PODS, WHICH STILL HAD NOT BEEN DOWNLOADED BY THE ORDNANCE DIVISION.

TECHNICIAN #2 ASSUMED THAT EVERYONE WAS AWARE THAT THE PODS WERE STILL LOADED AND WITHOUT HESITATION ARMED THE PODS. TECHNICIAN #1, WHO WAS SITTING ON THE JUMPSEAT NEAR THE COCKPIT, REQUESTED TECHNICIAN #3 TO PLACE THE ALE-47 GROUND OVERRIDE SWITCH INTO THE ON POSITION. TECHNICIAN #1 PRESSED THE ALE FIRING SWITCH IN THE CABIN, WHICH RESULTED IN ONE FLARE BEING JETTISONED FROM EACH ALE POD. TECHNICIAN #1 INSTANTLY RECOGNIZED THAT COUNTERMEASURES ORDNANCE HAD BEEN EXPENDED AND SHUT THE AIRCRAFT AUXILIARY POWER PLANT OFF AND REPORTED THE INCIDENT TO THE CHAIN OF COMMAND.

1. CAUSE OF MISHAP OR DEFICIENCY: HUMAN ERROR, CAUSE DESCRIPTION:

MAINTENANCE LEADERSHIP DID NOT COMMUNICATE PRIORITIES TO WORKCENTERS. THERE WAS A LACK OF SITUATIONAL AWARENESS BY THE AVIONICS TECHNICIANS. JUNIOR AVIONICS TECHNICIANS DISPLAYED A LACK OF ASSERTIVENESS.THERE WAS A FAILURE TO ADHERE TO ESTABLISHED PROCEDURES AND APPLICABLE MIMS BY MAINTENANCE PERSONNEL.THERE WAS A FAILURE OF MAINTENANCE PROCESS AND CONTROL OF WORK.

2. PERSONNEL FAILED TO FOLLOW PROPER PROCEDURE, OR FOLLOW APPLICABLE MIMS

3. PERSONNEL WERE ATTEMPTING TO EXPEDITE MAINTENANCE ACTION FOR FOLLOW-ON MISSIONS.

C. THE SUPERVISOR WAS PRESENT, QUALIFICATIONS OR CERTIFICATIONS:

NOT REQUIRED, THE INDIVIDUAL WAS TRAINED IN THE TASK.

GOLF: RECOMMEND THAT REFRESHER COURSES BE CONDUCTED FOR ALL PERSONNEL PRIOR TO ANY INITIAL AVIATION ORDNANCE EVOLUTIONS EMPHAZING ORDNANCE SAFETY AND AWARENESS. RECOMMEND THAT THE SENIOR TECHNICIAN INVOLVED IN THE EXPLOSIVE EVENT CONDUCT AFTER-ACTION BRIEFS FOR ALL MAINTENANCE DEPARTMENT PERSONNEL WITH AN EMPHASIS ON ORDNANCE SAFETY, AWARENESS, AND THE IMPORTANCE OF FOLLOWING PROPER MAINTENANCE PROCEDURES. LESSONS LEARNED ARE AS FOLLOWS: 1) CONDUCT A MAINTENANCE COORDINATION MEETING IMMEDIATELY FOLLOWING ORDNANCE EVOLUTIONS IN ORDER TO ESTABLISH PRIORITIES AND MAINTENANCE GUIDANCE FOR ALL WORKCENTERS. 2) MAINTENANCE TECHNICIANS ASSIGNED TO CONDUCT MAINTENANCE/TROUBLESHOOTING ON ORDNANCE EVOLUTION AIRCRAFT MUST CONDUCT A THOROUGH LOOK-INSPECTION, PAYING PARTICULAR ATTENTION TO AIRCRAFT WEAPONS STATIONS. ENSURE THE TECHNICIANS THEN DISCUSS THE UPCOMING MAINTENANCE EVOLUTION. 3) ENSURE DOCUMENTATION HAS BEEN COMPLETED AND THAT EACH AIRCRAFT IS IDENTIFIED AS HAVING ORDNANCE ABOARD. 4) ALWAYS UTILIZE CHECKLISTS AND APPLICABLE MAINTENANCE MANUALS. IN CONCLUSION, REFRAIN FROM BEING IN SUCH A RUSH THAT YOUR ACTIONS COMPROMISE SAFETY. ASK QUESTIONS IF YOU HAVE DOUBTS. COMPLACENCY KILLS.

This message pointed out a few things that can and should take place. However, another step that might help prevent problems that maintenance technicians cause would be to have them sign a statement on the MAF before going out to the aircraft. The statement would say: I will check each dispenser on the aircraft for magazines. I will not do maintenance on an aircraft with magazines installed in a dispenser. This one simple statement may make them more aware and less likely to have a problem.

Aircraft with PODs (helos) would have an additional sentence: While performing maintenance on the aircraft, I will not place the POD arm/safety handle in the arm position if a magazine is installed in the dispenser.

Anyone dealing with chaff, flares or CADs needs to heed the warnings pointed out in this story and in the supplied message. If not, the next story may be about the death or serious injury to a maintainer.

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The new **Tire and Wheel** safety poster is in and can be ordered online at **www.safetycenter.navy.mil**, under media and safety posters.